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EXAMINER	
NG, CHRISTINE Y	
ART UNIT	PAPER NUMBER
2464	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	09/786,604	RITTER, GERHARD	
	Examiner	Art Unit	
	CHRISTINE NG	2464	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *35-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 35-48 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 35 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,396,484 to Itoh.

Itoh discloses a method of measuring transmission characteristics of radio channels in a radio communications system having base stations (Figure 1, base station 30) and a radio station (Figure 1, mobile transceivers 100), the radio communications system utilizing a timeslot structure (Figure 4a) in a time frame for transmitting data. As shown in Figure 4a, the method comprises:

Transmitting the data as bursts (in downlink timeslots SD1-SDn) from a first of the base stations to the radio station, each burst having a channel measurement sequence (synchronization signal in SD1) and room for at least one data block (speech signal in SD1), the first of the base stations transmitting the channel measurement sequence in at least one timeslot (SD1) in which only the channel measurement sequence, and in which no data, is transmitted from the first of the base stations to the

radio station, wherein the room for the at least one data block is empty in the at least one timeslot. Base station 30 communicates with mobile transceivers 100 via time frames with time slots SD1-SDn. Each time slot includes room for a synchronization signal and room for a speech signal. When the speech signal is not loaded (empty), there is only the synchronization signal in the time slot. Refer to Column 9, lines 19-35.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,396,484 to Itoh in view of U.S. Patent No. 6,032,052 to Richardson.

Itoh does not disclose that the channel measurement sequence transmitted by the first of the base stations is transmitted at a constant power level.

Richardson discloses in Figure 4 a traffic channel burst wherein the training sequence bits 404 are transmitted at a nominal and constant output power level. Refer to Column 5, lines 45-55. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the channel measurement sequence transmitted by the first of the base stations is transmitted at a constant power level. One would have been motivated to do so in order for the mobile station to tune into the channel measurement sequence at a constant power level to receive the entire sequence.

6. Claims 37, 38, 46 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,396,484 to Itoh in view of U.S. Patent No. 6,125,125 to Narasimha et al.

Referring to claim 37, Itoh does not disclose that the channel measurement sequence transmitted by the first of the base stations is transmitted in the middle of a burst.

Narasimha et al disclose that a channel measurement sequence (training sequence used for synchronization) is transmitted in the middle of a burst. The base station "transmits a training sequence in the middle of every time slot so that the mobile station can learn the characteristics of the intervening radio path and train its equalizer" (Column 1, lines 38- 41). Refer to Column 3, lines 5-8. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the channel measurement sequence transmitted by the first of the base stations is transmitted in the middle of a burst. One would have been motivated to do so to follow the conventional GSM standard.

Referring to claim 38, Itoh does not disclose wherein the base stations are synchronized.

Narasimha et al disclose that all base stations in a system use a synchronizing mechanism to transmit frames to mobile stations at the same time so that the training sequences will be received by the mobile stations at virtually the same time. All base stations will be in substantial timing synchronization according to a GPS signal. Refer to Column 3, lines 5-49 and Column 4, line 58 to Column 5, line 5. Therefore, it would

have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the base stations are synchronized. One would have been motivated to do so to ease "handoff procedures when a mobile travels from one cell to another cell" (Column 5, lines 6-13).

Referring to claim 46, Itoh et al does not specifically disclose a radio communications system having a number of base stations and at least one radio station which uses the method of claim 35.

However, all cellular networks include a number of base stations and at least one radio station. Narasimha et al disclose in Figure 1 a cellular network 10 divided into a plurality of cells 12, wherein each cell 12 has a base station 14 for communication with mobile units 16. Refer to Column 1, lines 17-52 and Column 2, lines 33-44. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a radio communications system having a number of base stations and at least one radio station which uses the method of claim 35. One would have been motivated to do so since it is a conventional cellular network.

Referring to claim 49, Itoh does not disclose that the channel measurement sequence transmitted by the first of the base stations is also transmitted by at least one other base station.

Narasimha et al disclose in Figure 1 that "the training sequence transmitted from one BTS 14 is different than the training sequence transmitted by the other BTS's 14 that can cause co-channel interference" (Column 3, lines 9-11). This implies that BTS's that will not be subject to co-channel interference can have the same training sequence.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the channel measurement sequence transmitted by the first of the base stations is also transmitted by at least one other base station. One would have been motivated to do so so that the same basic training sequence can be used by all mobile stations in a system; thereby simplifying the system since all mobile stations tune into the same training sequence if it does not cause co-channel interference.

7. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,396,484 to Itoh in view of U.S. Patent No. 6,125,125 to Narasimha et al, and in further view of U.S. Patent No. 5,274,669 to Klank et al.

Referring to claim 39, Itoh does not disclose that cyclic correlation is used for channel measurement.

Klank et al disclose in Figure 3 a method of using cyclic correlation to determine the channel pulse response. Refer to Column 1, lines 56-65; Column 3, line 57 to Column 4, line 14; and Column 5, lines 11-14. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that cyclic correlation is used for channel measurement. One would have been motivated to do so so that the same basic training sequence can be utilized to determine channel measurements, thereby simplifying the system.

Referring to claim 40, Itoh does not disclose that different base stations transmit a same channel measurement sequence.

Narasimha et al disclose in Figure 1 that "the training sequence transmitted from one BTS 14 is different than the training sequence transmitted by the other BTS's 14 that can cause co-channel interference" (Column 3, lines 9-11). This implies that BTS's that will not be subject to co-channel interference can have the same training sequence. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that different base stations transmit a same channel measurement sequence. One would have been motivated to do so so that the same basic training sequence can be used by all mobile stations in a system; thereby simplifying the system since all mobile stations tune into the same training sequence if it does not cause co-channel interference.

Referring to claim 41, Itoh does not disclose that the same channel measurement sequence is transmitted with a different code phase by different base stations.

Narasimha et al disclose in Figure 1 that the "training sequences are orthogonal and will not interfere with each other if received at a mobile unit at precisely the same time". Refer to Column 3, lines 12-14. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the same channel measurement sequence is transmitted with a different code phase by different base stations. One would have been motivated to do so so that the same basic training sequence with a different code phase can be used by all mobile stations in a system; thereby simplifying the system since all mobile stations tune into the same training sequence if it does not cause co-channel interference.

8. Claims 42 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,396,484 to Itoh in view of US Patent No. 5,583,870 to Delprat et al.

Itoh does not disclose that a channel measurement sequence in a predetermined timeslot in the time frame has a special identifier [claim 42] nor that the predetermined timeslot is a 0-th timeslot [claim 45].

Delprat et al disclose that a channel measurement sequence (training sequence) in a predetermined timeslot (0-th timeslot; Figure 1B, time slots IT0) in the time frame has a special identifier (rank 0). Timeslot IT0 contains a synchronization sequence, identified by a rank of 0. Refer to Column 1, lines 39-49; Column 4, lines 61- 63; and Column 5, lines 55-60. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that a channel measurement sequence in a predetermined timeslot in the time frame has a special identifier [claim 42] nor that the predetermined timeslot is a 0-th timeslot [claim 45]. One would have been motivated to do so to follow the conventional GSM standard.

9. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,396,484 to Itoh in view of US Patent No. 5,583,870 to Delprat et al, and in further view of US Patent No. 4,577,334 to Boer et al.

Itoh does not disclose that the same channel measurement sequence is used in the predetermined time slot as is used in other time slots in the time frame.

Delprat et al disclose that the same channel measurement sequence (training sequence) is used in the predetermined time slot (Figure 1B, time slot IT0) as is used in

other time slots in the time frame (Figure 1B, time slots ITI-IT7). Refer to Column 5, lines 55-60. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the same channel measurement sequence is used in the predetermined time slot as is used in other time slots in the time frame. One would have been motivated to do so to simplify the system by using the same channel measurement sequence in all time slots.

Itoh also does not disclose that phase modulation is used in the same channel measurement sequence in the predetermined time slot [claim 43] and that a 180° phase modulation of the same channel measurement sequence is used in the predetermined timeslot from one time frame to a next time frame [claim 44].

Boer et al disclose in Figure 1 that the first part of a signal received over line 1 is a receiver training sequence that is phase modulated with two alternating phases modulated at a rate f_b on the carrier frequency f_c. Refer to Column 3, lines 35-39. As shown in Figure 2B, the phase alternations can be formed by 180° phase jumps. Refer to Column 3, lines 59-62. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that phase modulation is used in the same channel measurement sequence in the predetermined time slot [claim 43] and that a 180° phase modulation of the same channel measurement sequence is used in the predetermined timeslot from one time frame to a next time frame [claim 44]. One would have been motivated to do so since phase modulation is a common form of modulation to carry signals across a channel, allowing the use of a single carrier frequency in which the signal is encoded into the phase changes of the carrier. A 180°

phase modulation offers the advantage of only having to detect two phase changes at the receiver in order to recover the original signal, thereby minimizing error.

10. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,396,484 to Itoh in view of U.S. Patent No. 6,125,125 to Narasimha et al, and in further view of U.S. Patent No. 5,598,404 to Hayashi et al.

Referring to claim 47, Itoh does not disclose that the radio communication system is a TDD radio communication system.

Hayashi et al disclose that in a TDD system, the transmission/reception is performed in the same frequency band on the basis of time division. Refer to Column 2, lines 62-65. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the radio communication system is a TDD radio communication system. One would have been motivated to do so since, as compared with FDD, TDD offers more efficient use of the spectrum and bandwidth because each user is allocated only one channel and is comparatively more flexible, less complex and cheaper.

Referring to claim 48, Itoh does not disclose that the radio communication system is a FDD radio communication system.

Hayashi et al disclose that in a FDD system, two frequency bands, which are sufficiently spaced apart from each other, are respectively assigned to transmission and reception. Refer to Column 2, line 65 to Column 3, line 2. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the radio communication system is a FDD radio communication system.

One would have been motivated to do so because, as compared with TDD, FDD does not introduce latency between the transmit and receive cycles, allows transmission and reception at the same time, and avoids propagation delays that limit the distance between the user and the station.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE NG whose telephone number is (571)272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Ng
October 22, 2009

/Ricky Ngo/
Supervisory Patent Examiner, Art Unit 2464